

AMENDMENTS TO THE DRAWINGS

Please add new Figure 16, a copy of which follows.

Attachment: New Sheet

REMARKS/ARGUMENTS

In response to the Official Action mailed June 26, 2007, Applicants amend their application and request reconsideration. In this Amendment claims 6 and 7 are cancelled. No claims are added so that claims 1-5 and 8-21 are now pending.

The drawings were objected to as not showing the liquid crystal material of claim 20 or the digital reflecting means of claim 21. In response, a new Figure 16 is supplied. That figure is fully supported by the description of Embodiment 9 at pages 41 and 42 of the patent application. Of course, the specification must be amended to refer to Figure 16 and the reference numbers appearing in that figure need to be added to the specification. These changes constitute the specification amendment. Figure 16 does not introduce new matter because the elements shown in that figure are individually described in the patent application as filed, as well as in the arrangement shown in the figure. The two kinds of modulators mentioned in the patent application in the final paragraph at page 41 and the first full paragraph on page 42 are shown as element 14 of Figure 16. This depiction is believed to be adequate to meet the requirements of 37 CFR 1.83. Therefore, entry of Figure 16 and withdrawal of the drawing objection are respectfully requested.

In this Amendment claim 1 is amended to incorporate the limitations of examined claims 6 and 7. Claim 17, a second independent claim is similarly amended. The only additional claim amendments are directed to issues of form.

The invention is directed to a wavelength converting laser device and a display device incorporating that wavelength converting laser device. The wavelength converting laser device is described similarly in both of the two independent claims, claims 1 and 17, as presented here. In particular, the wavelength converting laser device includes a broad-area laser diode that has a slab optical waveguide structure that controls vertical transverse mode of the laser light generated by the laser diode. The laser diode also includes an optical resonator having first and second reflectors.

Finally, the laser device includes a wavelength converter producing harmonic light. The wavelength converter includes a slab optical waveguide structure that controls vertical transverse mode of the laser light and harmonic light.

Because of the slab optical waveguide structure of the wavelength converter, the laser beam is horizontally expanded with the result that the power density of the laser light, as well as of the harmonic light, has reduced power density in the wavelength converter. Thus, the heat produced by absorption of the laser light and the harmonic light is spread over a relatively wide area. As a result, the temperature rise of the claimed device, particularly the wavelength converter, is locally smaller than in a wavelength converter lacking this slab optical waveguide structure. Because of the reduction in temperature change, wavelength deviation produced by a temperature rise is likewise reduced, improving wavelength conversion efficiency. This effect and the structure producing it are described in the patent application, for example, from page 14, line 8 through page 15, line 11.

Examined claims 1, 2, 5-9, 11, and 17 were rejected as anticipated by Chwalck (U.S. Patent 5,418,802). The rejection is respectfully traversed. Further, it appears that Chwalck is not of record in the prosecution of this patent application because it is not listed on any PTO-1449 form or the PTO-892 form. Accordingly, Applicants respectfully request that the publication be made of record by listing it on a PTO-892 form in the next communication.

In order of Chwalck to anticipate either of independent claims 1 and 17 or the dependent claims rejected as anticipated, Chwalck must describe every element of claims 1 and 17. Chwalck fails to meet this rigorous test, at least with respect to the slab optical waveguide structures.

In citing Chwalck, the Examiner directed attention to its Figures 5A and 5B. However, no slab optical waveguide structure can be found in those figures nor in the description of those figures in the text of Chwalck. Those figures are described in column 9 of Chwalck where reference is made to a “quasiphase matching (QOM) portion 19.” In the rejection, that portion 19 was compared with the wavelength

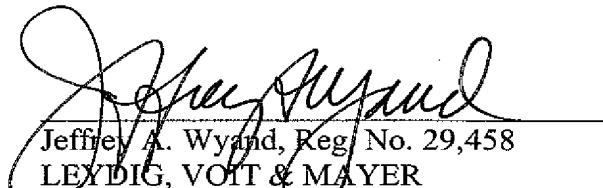
converter of the claims. However, in Chwalck, the optical waveguide structure includes a lithium niobate channel waveguide 4 that controls the laser beam. That channel waveguide 4 of Chwalck does not permit expansion of the laser beam like the slab optical waveguide structure of the wavelength converter according to claims 1 and 17. In other words, the kind of control referred to in the claims, controlling vertical transverse mode of the laser light and harmonic light, shown in the patent application to be an expansion, is not described by Chwalck. Therefore, Chwalck fails to meet all of the limitations of claims 1 and 17 and the dependent claims 2, 5-9, and 11 that have been commonly rejected with independent claim 1. Upon reconsideration, that rejection should be withdrawn.

Moreover, because the structure of the claimed invention is different from the structure of the apparatus described by Chwalck, the advantages of the invention, already described, cannot be achieved by Chwalck. There is no suggestion to the contrary in Chwalck. The absence of this advantage of the invention further demonstrates that Chwalck neither anticipates nor suggests the invention as defined by the claims now pending.

Dependent claims 10, 18, 19, 20, and 21 were rejected as unpatentable over Chwalck in view of multiple secondary references. It is apparent that the rejections of these claims are all founded upon the assertion that Chwalck anticipates claims 1 and 17. Since, for the reasons just provided, there is no such anticipation, further response to the respective secondary rejections is neither necessary nor provided.

Reconsideration and allowance of claims 1-5 and 8-21 are earnestly solicited.

Respectfully submitted,



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